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ABSTRACT

A study was conducted to clarify some of the ambiguous findings reported in the media dependency literature. Specifically, it sought to establish whether relationships between use of the media and surveillance gratifications obtained from that use were affected by an individual's medium of primary reliance or whether these relationships might be exhibited without regard to the medium most often used. Approximately 600 adults were contacted by telephone and questioned about their mass media use, political orientation, and demographic characteristics. Data were analyzed by means of the LISREL procedure, which posits "true" or "latent" variables that are unmeasureable except through their indicators. The findings revealed that the medium of primary reliance did make a difference in the relationships between use of the media and surveillance gratifications. It should be noted, however, that this finding is possibly due to a reason unsuspected in previous research--failure in the validity of the questions as indicators of constructs regarding use of the media. (FL)

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Clarifying Media Dependency Relationships Through Structural Equation and Measurement Models

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Clarifying Media Dependency Relationships Through Structural Equation and Measurement Models

Two coincident trends within the United States political system have focused attention on the possibility of a causal relationship: political partisanship has declined dramatically since 1965 and reliance on television rather than newspapers for political information has been increasing since 1960 (Roper, 1977; Ziemke and Luetscher, 1979).

Several studies have suggested that television news acts as a causal mechanism in corroding the channels of political communication in the United States (Robinson, 1975; Patterson and McClure, 1976; Hofstetter, 1978). According to these charges, television focuses on images and peripheral aspects of the news rather than on the important issues or stands politicians take on controversies. Becker and Whitney (1980) see television news as artificially balanced to present both sides of an issue, even when the two sides are clearly unequal. Robinson (1975) has argued that television news is more negative than newspapers and that television news emphasizes conflict, focusing on problems and impressions rather than on solutions to problems.

Taken together, these studies suggest that persons dependent on television news for current affairs information are denied aspects of that information which are necessary to rational decision-making. These individuals are left confused and even mistrustful of the political system.

These notions can be traced back in the literature to television's infancy. In 1941, David Sarnoff suggested that

> Political addresses are certain to be more effective when the candidate is both seen and heard, and is able to supplement his address with charts or pictures. Showmanship in presenting a political appeal by television will become more important than mere skill in talking, or the possession of a good radio voice; while appearance and sincerity will prove decisive factors with an audience which observes the candidate in close-up views (p. 149).

Much of the literature on the subject can be divided into one of two separate perspectives. Drawing from theoretical work by DeFleur and Ball-Rokeach (1975), Becker and his colleagues (Becker and Whitney, 1980; Becker and Fruit, 1980; Becker, Sobowale and Casey, 1979) develop the notion of media dependencies as the causal factor in the television use-political knowledge and affect relationships. Becker suggests that individuals are dependent to varying degrees on newspapers and television for their political information. To the extent that they depend on either medium exclusively they are either television or newspaper dependent. Becker and his colleagues see dependency as a complex combination of reliance on a given medium and frequency of use of the medium for public affairs content.

Although their theoretical formulation thus permits individuals to be both newspaper and television dependent to some extent, operationalization and analyses have generally looked at relationships within dichotomized groups (i.e., they have categorized individuals as either television or newspaper dependent).

McLeod and his colleagues (McLeod, Luetscher and McDonald, 1980; McLeod, Glynn and McDonald, 1981) take a somewhat different stance. According to their formulation, an individual's orientation to the media provides a contingent condition under which to examine any media effects. Under this notion, reliance on a particular medium indicates a particular orientation toward use of the media for specific needs, and this qualitative difference should result in very different relationships among the media variables and various dependent variables.

At the operational level, the two formulations include several variables measured in the same, or nearly the same, manner. On the theoretical level, however, there is a major difference.

Becker and his colleagues see any effect of newspaper or television dependence exhibited across the board while McLeod and his colleagues see effects as contingent upon the medium relied on most for current affairs information. The Becker formulation might be seen as postulating "true" or "latent" variables, newspaper dependence and television dependence, which act on individuals' information needs such that people feel a vicarious participation in politics through watching events on television. The overall result is a decreased feeling of need for information as well as decreased processing of the information available through television.

The McLeod formulation, however, sees a person's particular orientation to the media (i.e., his/her choice of a medium for primary reliance for public affairs information) as the major "latent" or "true" variable to consider in the relationship. Within a particular reliant subgroup, one is most likely to observe positive effects of the medium relied upon, regardless of which medium the person has chosen.

The two theoretical approaches and attendant methodological confusion in the literature have resulted in widely disparate findings. Robinson (1975; 1976) found that those reliant upon television for information in the election campaign tended to be lower on political efficacy and trust measures than were those reliant upon the print media. Becker and Whitney (1980) found television dependence related to low national political knowledge, mistrust of local government officials and perceived comprehension of local governmental affairs, but not to trust of national government officials.

O'Keefe (1980) found that reliance on television has less impact on political values than does newspaper reliance, but stronger effects among the lower educated and politically uninterested.

McLeod et.al. (1978) found that television and newspaper use both have integrative political effects. When analyzing reliant subgroups (i.e., those who indicate they mainly rely on a particular medium for their political information), McLeod et.al. (1980) find positive integrative effects of television for the television reliant, but negative effects for the sample overall. Additionally, McLeod et.al. (1980) examine the components of reliance and find newspaper and television reliance have somewhat separate antecedents, taken as an indication that the two are not really opposite ends of a continuum and should not be analyzed as such.

The literature thus reflects confusion among researchers as to what the actual dependent and independent variables are in the hypothesized relationships. While one orientation posits an effect of reliance upon a medium, another sees reliance as only a partial indicator of dependence, and still another sees reliance as a qualitative, contingent variable.

The purpose of the present paper is to focus on the verbal descriptions outlined above in an attempt to clarify the meaning of certain relationships between the concepts on a measurement level, and the implications these relationships have for quantitative research in the area.

Analysis results are presented in three sections: the first section examines surveillance use of the media. Others (McLeod and Becker, 1981; McLeod and McDonald, 1981) have already pointed to the stability of measures of the needs people have and gratifications they receive from use of the media. The uses and gratifications perspective itself stretches across 40 years of communication research (see Herzog, 1944). Pertinent to the present study is the consideration of the structure of the needs people have for using the media for surveillance information.

A Becker-like formulation would posit that because the media actually act on peoples' information needs, members of the audience for one medium should reflect surveillance need structures different from the audience for another medium. A McLeod-like formulation, however, suggests that the underlying neeedd structure should remain the same, although levels of surveillance needs might be different for the different audiences.

Analsysis takes the form of a simultaneous test of equality between audience groups in their structure of surveillance uses of the media. Statistical tests are used to determine whether the more appropriate model is a formulation which permits each group to differ in their surveillance structure or whether a more general approach which considers surveillance structures invariant across groupings provides a more appropriate conceptualization.

A second section consists of an analysis of the media use behaviors of the audience considered generally and the audience split on the basis of their medium of primary reliance for political information. Although the notions of reliance and dependence on the media have also been in the literature for 40 years (see Meine, 1941), there had been no attempt to distinguish between the two until the past few years.

The present study examines several alternative formulations of mass media use in order to clarify conflicting results in the area. Statistical tests are used to screen these models for the most appropriate formulation of use of newspapers and television for news information.

A final section considers the relation between surveillance uses of the media and use of newspapers and television in terms of structural equation models.

Information obtained in the first two sections is used to develop alternative models of the surveillance need-mass media use relationship. Statistical tests are used to determine the most appropriate models of the relationship when background factors of age, education and perceived social class of the respondent are included in the model. Additionally, the different relationships observed through analyses of the different models are examined.

Method

A stratified random sample of 560 adults (i.e., persons over 18 years of age) in Madison, Wisconsin, were contacted by telephone in the fall of 1980 and asked about their mass media use, political orientation and demographic characteristics.

Questions used in the present study relate to the following general areas: Mass Media Reliance - a rank ordering of reliance on newspapers, television, radio, family and friends and other sources of political information. The present study is concerned with both primary reliance (the source listed as first or most important by the respondent) and newspaper and television reliance (a medium specific measure - the rank ordering of a medium, such as newspapers or television). Primary reliance consists of three possible categories: newspaper reliant, television reliant, or 'other' reliant (those mentioning any source other than newspapers or television as their primary source of political information). Newspaper reliance and television reliance refer specifically to the rank ordering of the appropriate medium.

Surveillance Uses of the Media - Three questions designed to measure the extent to which individuals feel the need to monitor their political environment through the mass media. These measures have been shown not to be related to use of a specific medium but instead to "cut across" the media and tap a particular orientation toward use of the media in general for political information (McLeod and Becker, 1981).

Mass Media Use - The reported frequency of using newspapers and television for national, and local news as well as the frequency of reading the newspaper and watching television. Although by no means exhaustive of measures of media use, they are considered sufficiently representative of the types of behaviors under consideration in the present study.

Education - Respondent's self report of the number of years s/he has spent in school.

Social Class - Self report of respondent's social class (a six-point scale).

Age - Self report of respondent's age.

The measures are considered to be adequate for the analysis task because of their similarity to those used by McLeod and Becker in their studies and are expected to provide ample generalizability to both of these theoretical propositions.

Analysis Technique

Maximum likelihood estimation techniques are used to clarify some of the relationships among the variables thoough the analysis of covariance structures and use of the LISREL procedure (Joreskog and Sorbom, 1980). The exact mathematical procedures used in the LISREL analysis are somewhat complex and will not be developed here. However, a logical explanation of the LISREL technique and notation is necessary for an understanding of the analysis results and is adumbrated below. The interested reader is referred to Joreskog (1973; 1974) for more complete procedural explanations.[1]

In models of structural equation systems, the LISREL procedure posits "true" or "latent" variables which are unmeasureable except through their indicators. The true variable is seen as causing the levels of the indicators in much the same way as traditional factor analysis. The relationship between the true variables and each of the indicators is indicated by the regression of the indicator on the true variables. The resultant value of the slope (the λ value) is akin to factor pattern coefficients in traditional factor analysis.

True variables which are endogneous to the system (denoted $\eta_1, \eta_2, \eta_3, \ldots \eta_j$) are measured through their indicators (denoted $y_1, y_2, y_3, \ldots y_k$), and true variables exogenous to the system (denoted $\xi_1, \xi_2, \xi_3, \ldots \xi_m$) are measured through their indicators ($x_1, x_2, x_3, \ldots x_n$). The reliability of each indicator is estimated and a related estimate of the error associated with the indicators is computed. When estimates of the measurement properties of the indicators are thus established, the LISREL program estimates the relationships between the endogenous and exogenous variables and "true" disturbance terms associated with the endogenous variables through solving a system of simultaneous equations as specified in the model.[2]

The LISREL program computes a correlation matrix for the variables based on the estimated relationships between the indicators and the true constructs. The computed correlation matrix is then compared to the actual data, and goodness-of-fit statistics are calculated for fit of the model to the data.

Interpretation of these statistics is the reverse of normal interpretation in statistical tests. That is, large values of X^2 and consequent small probability values indicate poor ability of the postulated model to explain the data: small X^2 values imply that the specified pattern of factor loadings or hypothesized relationships between the true constructs are compatible with the observed data (Joreskog and Sorbom, 1980).

LISREL analysis is a full information technique. Data from separate samples or subgroups can be used in a simultaneous analysis. Additionally, any or all parameters can be constrained as equivalent across groupings. Differences in X^2 goodness-of-fit statistics are also distributed X^2 (with $df_1 - df_2$ degrees of freedom), so different models may be subject to statistical test for improvement of fit. By extension, differences in X^2 between two models, one of which constrains certain parameters equivalent across groups and one of which permits parameters to vary across groupings, is a statistical test of whether or not the grouping variable is necessary to improve the fit of the model, or, in alternative phrasing, whether or not the factor that groups individuals is related to the true variables (Hammond, 1973; Specht and Warren, 1976).

An additional strength of the LISREL technique is that, unlike traditional regression or path analytic procedures which require two stage estimation, all parameters are estimated simultaneously through iterative procedures. The technique is impossible with ordinary regression procedures yet is clearly suggested when a theoretical system of equations is hypothesized (Fink, 1980).

Fink (1980) identifies four specific advantages of such a linear structural equation estimation technique:

1) specification of theoretical and measurement relations simultaneously together with statistical assumptions, which allows

2) consistent and efficient estimation of a total model, which allows

3) use of statistical inference for global tests on complete models as well as the usual tests on single coefficients, which results in

4) parsimonious estimation and evaluation of complex theoretical systems

The LISREL approach thus utilizes considerable overlap between theoretical notions and methodological formulation. Fink (1980) notes that a particular strength evident in this analysis is that the investigator must make all of the interrelationships among theoretical and measurement variables explicit. LISREL analysis is seen as particularly appropriate in the present context and is used for analyses reported here.

Results

Surveillance Analysis

Figure 1 is a visual representation of the analysis of surveillance uses of the media. The true construct, Surveillance Use, is assumed to cause the individuals in the sample to have specific values of the indicators. That is, the extent to which individuals feel a need to survey their environment will affect how much they use the media to understand candidates' stands on issues, the personal qualities of candidates, and to see what candidates will do if elected to office.

Major analysis is developed to consider whether the factor structure for surveillance use differs for the three reliant subgroups or if they are sufficiently similar as to not warrant the division (Table 1).

Results indicate nearly identical X^2 goodness-of-fit statistics associated with the two models. The extra degrees of freedom associated with the model which does not consider primary reliance provides a higher probability that the model is relatively more likely to have been the one which generated the data. In fact, the improvement in fit obtained from dividing the sample into specific reliant groups can be tested bythe difference in the X^2 values (X^2_{dif} = (10.69 - 10.02) = .67; d.f. = (10 - 6) = 4; n.s.) and one should conclude that there is no reason to consider the reliant subgroups different in the factor structure of their surveillance needs.

Of particular interest are the lambda values, which, if squared, are the reliability values for the indicators (Dalton, 1980). The present values (.42, .41 and .20) compare favorably with test-retest correlations (one year intervening between measures) reported for the same measures by McLeod and McDonald (1981) (.28, .25 and .18, respectively).

A second analysis section centers on the measurement of newspaper and television use and adopts a strategy similar to that used in the surveillance analysis. Analyses were conducted to test for differences between the groups in the factor structures of several plausible theoretical formulations of use of the media.

The first model examined might best be termed the "single variable" model of mass media use. This model is formulated along the lines of theoretical propositions that people rely on "the mass media" for their information needs (e.g., DeFleur and Ball-Rokeach, 1975). Alternatively, the model bears a resemblance to those posited by Becker and his colleagues (Becker and Whitney, 1980) as newspaper and television use as opposite poles of a continuum (i.e., people might be classified as either "high" or "low," and these classifications should, theoretically, be associated with use of newspapers or television.

Examination of the λ values indicate some validity to the notion that newspaper and television use are opposite poles of a continuum (Table 2). All the values associated with the newspaper indicators in Model I are positive, and half of those associated with television are negative. However, those related to use of television for obtaining news information (both national and local) are positively associated with the global construct, distinctly contradictory to theoretical propositions concerning competing use of the media.

A second model focuses on measurement of two separate constructs, use of television and use of newspapers, a modification similar to those used by Becker and his colleagues. Results indicate this model (Model II, table 2). of media use is less contradictory than Model I, in that all indicators are positive within the construct, and the model shows a significant improvement in fit over Model I (X^2_{dif} = 62.47; d.f. = 1 ; p = .00).

A third model follows closely the McLeod formulation, and splits the sample of respondents into three reliant subgroups. Permitting each subgroup to develop its own factor structure significantly improves the fit of the model when compared to Model II (X^2_{dif} = 37.46, 5 d.f., p = .01). However, several of the model parameters are statistically nonsignificant. This is especially true for the television reliant subgroup, in which television viewing frequency is the only significant indicator of television use. The model thus suggests the need for some alteration of indicators.

In light of these results, two other models were fit to the data (Models IV and V). Model IV is developed as a combination of Models II and III. In Model IV, the sample was split into reliant subgroups as in Model III, but within each group only one true construct was posited (as in Model II). The model shows an increase in X^2 when compared to Model III, and should be rejected.

Model V was formulated to test whether an improvement in fit might be obtained by considering four separate constructs - newspaper reliance, television reliance, newspaper use and television use. The model shows a poorer fit than Model III, and should also be rejected.

The above analysis indicates, then, that the most appropriate formulation from among the five attempted here[4] is Model III, formulated similar to that posited by McLeod and his colleagues (1980; 1981).

However, because the model itself does not adequately fit the data, and because there is some indication of overlap across constructs, several alternative models were developed in order to more appropriately characterize the data and fit a more parsimonious model.

Following the same criteria applied above, several possible variations were screened and tested using the data of the entire sample as a guide. A model which permitted all indicators except those of frequency of use of the two media to be indicators of more than one true construct provided the best fit and is presented in Table 3 (Model I).

As evident in the results, there is a major problem in conceptualizing media use in terms of specific media. For example, frequency of watching national news on television appears to be an indicator of both television and newspaper use. Another area of concern is evident in nonsignificant parameters associated with state and local television news. Because of these problems, a revised formulation was tested which constrained the indicators of use of the two media for state and local news as polar opposites (Model II, Table 3). Because it is essentially the same model as the previous one, but with different factor structure estimated, the model goodness-of-fit X^2 is identical to that of Model I. However, a major difference in the models is evident in the statistical significance of the coefficients.

Here, the use of two different indicators to discriminate between the two constructs results in intriguing differences. Aside from the cleaner model which emerges (i.e., a model with indicators which appear to make more theoretically intuitive sense in that use of newspaper for local news is negatively related to hours spent with television, etc.), a major change can be seen in the correlated error associated with the true constructs.

While the model which uses as primary indicators the frequency of use of the media results in negatively correlated disturbances (statistically nonsignificant), the revised model shows a positive correlation between these disturbances. The revised version would appear to make more theoretical sense if one assumes the true constructs to be use of the two media for gathering current affairs information.

Further analysis called for use of the data from the reliant subgroups to test whether the structure of the revised model might hold for the three reliant subgroups or whether consideration of the full sample might hinder detection of an interaction of structure (Model III, Table 3).

Only a slightly worse fit is found for the model developed from data of the reliant subgroups. (X^2_{dif} = 21.90, 24 d.f.; $p > .50$), which indicates some support in line with the Becker formulation positing no need to consider reliant subgroups as an analysis contingency. However, it should be noted that the formluation of Model III permitted true disturbance terms to differ for the three subgroups, and the difference here is considerable. Additionally, the formulation does not consider use of reliance as an indicator to compare against the full sample, and, as indicated above (Table 2), such a formulation shows greater strength in the subgroup analysis. An additional consideration here is that the overlap between indicators suggests that use of the media for obtaining news is not a scale running from newspapers to television.

A third section of the analysis centers on the structural relationships between the true constructs previously analyzed and antecedent conditions of education, age and social class. In accord with above analyses, measurement of media use constructs permits overlapping indicators with the exception of use for state and local news.

Primary interest centers on analysis of the relationships between the constructs - that is, do newspaper and television use act on individuals' surveillance needs directly, and how do antecedent variables such as age, education and social class affect these relationships? Analysis develops through consideration of the entire sample exhibiting effects "across the board" or whether these effects are contingent upon the medium of primary reliance.

Parameters of the most general model are presented in Figure 2. As expected, a positive path from newspaper use to surveillance use is estimated, and a negative (although nonsignificant) path from television to surveillance use is estimated. Age appears to be the strongest background variable, influencing newspaper and television use positively and surveillance use negatively. Education appears to influence newspaper use positively but the relationship between education and television use is small and nonsignificant, although negative. An R^2 value for the full model can be estimated as 1 - .42 = .58.(1.0 minus the true disturbance on the surveillance construct). While the model does not adequately fit the data, estimate of the interpretation of the goodness-of-fit values indicate that values obtained for this model are not "bad" estimates.[5] However, the strength of the approach and utility of the analysis rests in comparison of alternative formulations through differences in the goodness-of-fit statistics.

Comparison of this model and two other models based on grouping according to primary reliance are presented in Table 4. Results of the analysis indicate best fit is obtained through allowing the relationships between the true constructs to vary across reliant subgroups. Some improvement in fit is obtained by also permitting the factor structures of the media use constructs to vary, but the improvement is marginally significant (X^2_{dif} = 23.87; 16 d.f.; p = .09). Additionally, consideration of varied factor structure among the reliant subgroups increases the difficulty in interpreation of the structural parameters.

Consideration of varied factor structure among the reliant subgroups increases the difficulty in interpreting the structural parameters. Therefore, parameter estimates for both models are presented in Table 5 and Figures 3 and 4. As can be seen in the figures, structural parameters change very little in comparing Model II to Model III. However, the actual number of statistically significant parameter estimates changes rather drastically (only two of the six estimated path coefficients relating media use and surveillance are significant for Model II; five are significant for Model III). For both models, however, the notion that deleterious effects of television news are associated only with the newspaper reliant is again confirmed. Both television and other reliant subgroups indicate positive association with surveillance and television use.

Further interest centers on the factor structures of media use for the two different models (Table 5). The factor structure for Model II implies newspaper use is composed mainly of using newspapers for national news and state and local news, while the television construct is based largely on not using newspapers for national news, using television for national, state and local news, and frequency of watching television.

Structures among the reliant subgroups indicate somewhat different patterns, however. Among the newspaper reliant, the newspaper use variable appears to be a function of use of newspapers for obtaining national news, and the television use variables appear to be composed largely of not using newspapers for national news.

The television reliant group, however, show the newspaper use variable composed of use of newspapers for state and local news and use for national news, but use of television composed mainly of using television for national news, state and local news, and using newspapers for national news.

For the other reliant subgroup, the newspaper use variable is composed mainly of using newspapers for national news, and the television variable e is composed mainly of using television for national, state and local news. An interesting development in both Models II and III is that frequency of using a newspaper is positively related to both factors for all groups. Frequency of viewing television, however, is negatively related to the newspaper construct and positively related to the television construct for all but the television reliant.

An additional interesting finding is in the correlation between the two media use variables. The correlation of the true disturbances associated with the true media variables is, in all cases, positive. This correlation is nonsignificant for the television reliant and other reliant groups, but is fairly large (.20) for the newspaper reliant group, indicating that a variable which affects both newspaper and television use has been left out of the model. The implication is that some unknown variable is affecting these relationships for the newspaper reliant, but appears to have little effect on the relationships for the other reliant groups.

Summary and Conclusions

The aim of this paper was to begin to clarify some of the ambiguous findings reported in the media dependency literature. A primary focus was to establish whether or not relationships between use of the media and surveillance gratifications obtained from that use were affected by individuals' medium of primary reliance, or whether these relationships might be exhibited without regard to which medium individuals relied on for most of their information.

Analysis of the surveillance use structure provides further reinforcement of the ideas behind the uses and gratifications approach to the study of mass media use. The analysis presented here found the actual factor structure of surveillance uses of the media invariant across reliant subgroups - groups shown in previous research (e.g., McLeod, Luetscher, McDonald, 1980) to be quite different in their media use.

That stability in surveillance use structure is probably most notable in consideration of the analyses of the second section - the measurement of media use behaviors.

There is suggestion here that investigating effects of the media based on the medium rather than the content may be a fruitless task. Variables developed to measure television news, for example, appear to be related to entertainment use of television for the newspaper reliant but to actual news-seeking behavior for the television reliant. Similarly, measurement of frequency of television viewing is negatively related to using either television or newspaper for news among the television reliant yet positively related to using television for news among the newspaper and other reliant subgroups.

The primary research question addressed in the present paper - does medium of primary reliance make a difference in the relationships between use of the media and surveillance gratifications? - should be answered in the affirmative, although possibly for a reason unsuspected before the present analysis - failure in the validity of the questions as indicators of our constructs regarding use of the media. Previous studies suggest a causal corrosive effect of television news but the present analysis suggests these studies have tapped only negative correlations between use for entertainment and the desire for news.

The negative effect of television news seen here for the newspaper reliant subgroup appears to be a function of failure in measurement of the construct, and is statistically nonsignificant. Analysis of the television and other reliant subgroups provides strong positive coefficients for both television and newspaper use. Analysis thus replicates McLeod, Luetscher and McDonald (1980), Reese and Miller (1981) and O'Keefe (1980) in finding positive effects of television news, but extends results of those analyses into a general orientation toward use of the media for surveillance gratifications.

Charges linking political malaise with reliance on television for news information appear to have no support here - for those who rely on television show the strongest coefficients relating television news and use of the media for surveillance purposes.

A final summary of results should also address the problem of correlation of the error terms among the constructs in the structural models (see Model III, Table 4). The significant correlation of the disturbances in the true constructs for the newspaper reliant subgroup (which does not occur for either the television or other reliant group) suggests another unmeasured or unspecified conceptual variable affecting the two constructs for the newspaper reliant group but not for the television or other reliant groups.

The use of education, social class and age as exogenous variables precludes the consideration that any of these would be the excluded variable. The difficult task is understanding what the variable or variables might be, and how it (or they) acts only on the newspaper reliant. What might be suggested here is that measurement of the constructs needs to be developed in terms more specific than applying the same measures across reliant subgroups. Media use among the various subgroups may need to be measured in terms different from those of other subgroups.

The task for further research is to develop more adequate measurement and theoretical propositions concerning orientation toward the media, including interest in the news, regardless of the medium, and to develop indicators adewhich measure more specific media behaviors if future studies are to test relationships between those behaviors and other dependent variables. The present analysis shows rather specifically some of the problems stemming from inadequate specification at the measurement level which result in incomplete or even improper conclusions in methodological and theoretical development.

Notes

[1] Previous application of LISREL can be found in Jorekkog and Sorbom, (1976), Werts, et.al. (1977), Wheaton et.al. (1977), Fink (1980) has given a concise explanation of the advantages and disadvantages of structural equation systems in general and use of LISREL in particular with examples from communication research. Burt (1973) deals with the tie between confirmatory factor analysis and theory construction with mass media examples.

[2] In practice, all parameters are estimated simultaneously; the above explanation is for logical rather than mathematical clarity.

[3] Hammond (1973) has shown that coefficients are unaffected by grouping unless the factor that groups individual units is related to the independent variables. This is the hypothesis being evaluated when models are compared across groups. See also Specht and Warrent (1976) for further elaboration.

[4] Several other models were also fit to the data, but these are omitted because they were merely extensions or modifications of these and goodness-of-fit values were larger than those presented here.

[5] Joreskog and Sorbom (1980) note that, as degrees of freedom and sample size increase, X^2 values will increase, making it more difficult for a model to fit the data. Various remedies and corrections have been proposed but none have been widely accepted as the correct procedure. Generally, ratios of 5 to 1 (X^2 to degrees of freedom) are accepted as adequate when dealing with large sample sizes. All models presented in this paper are well within that range. The key utility of the procedure rests in comparison of models.

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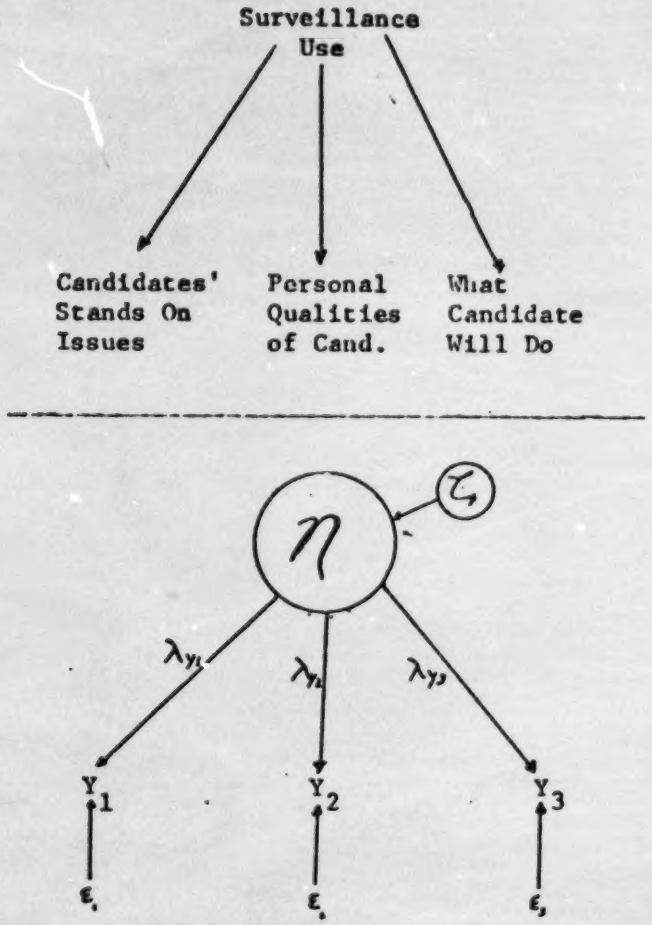

Figure 1. Theoretical and measurement models for surveillance uses of the media.

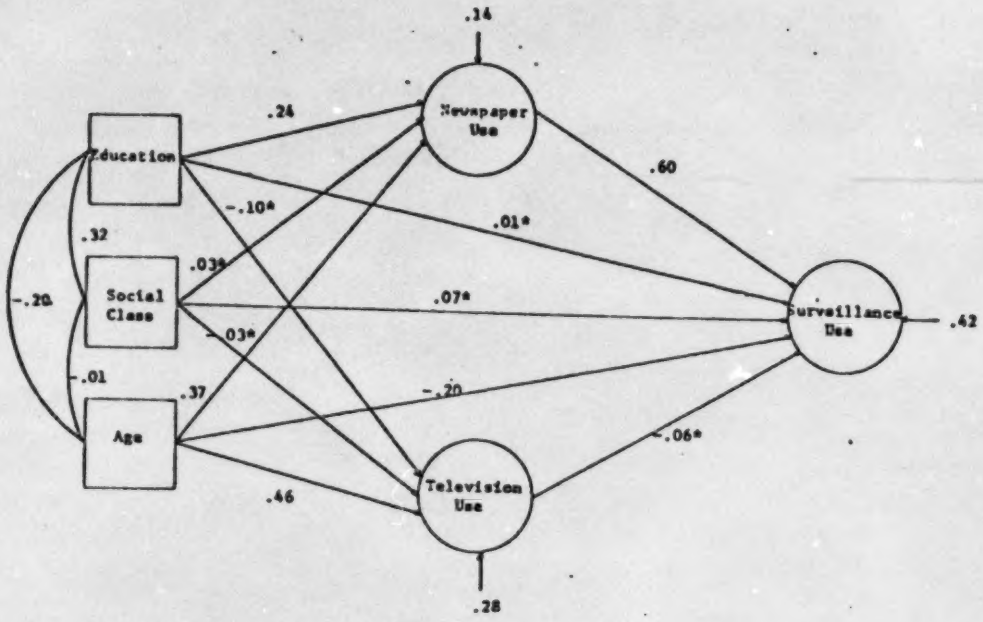

Figure 2. Structural equation model relating use of television and newspapers for news information and surveillance uses of the media, including antecedent conditions of age, education and social class. Path coefficients are standardized. Parameters indicated with an asterisk are statistically nonsignificant.

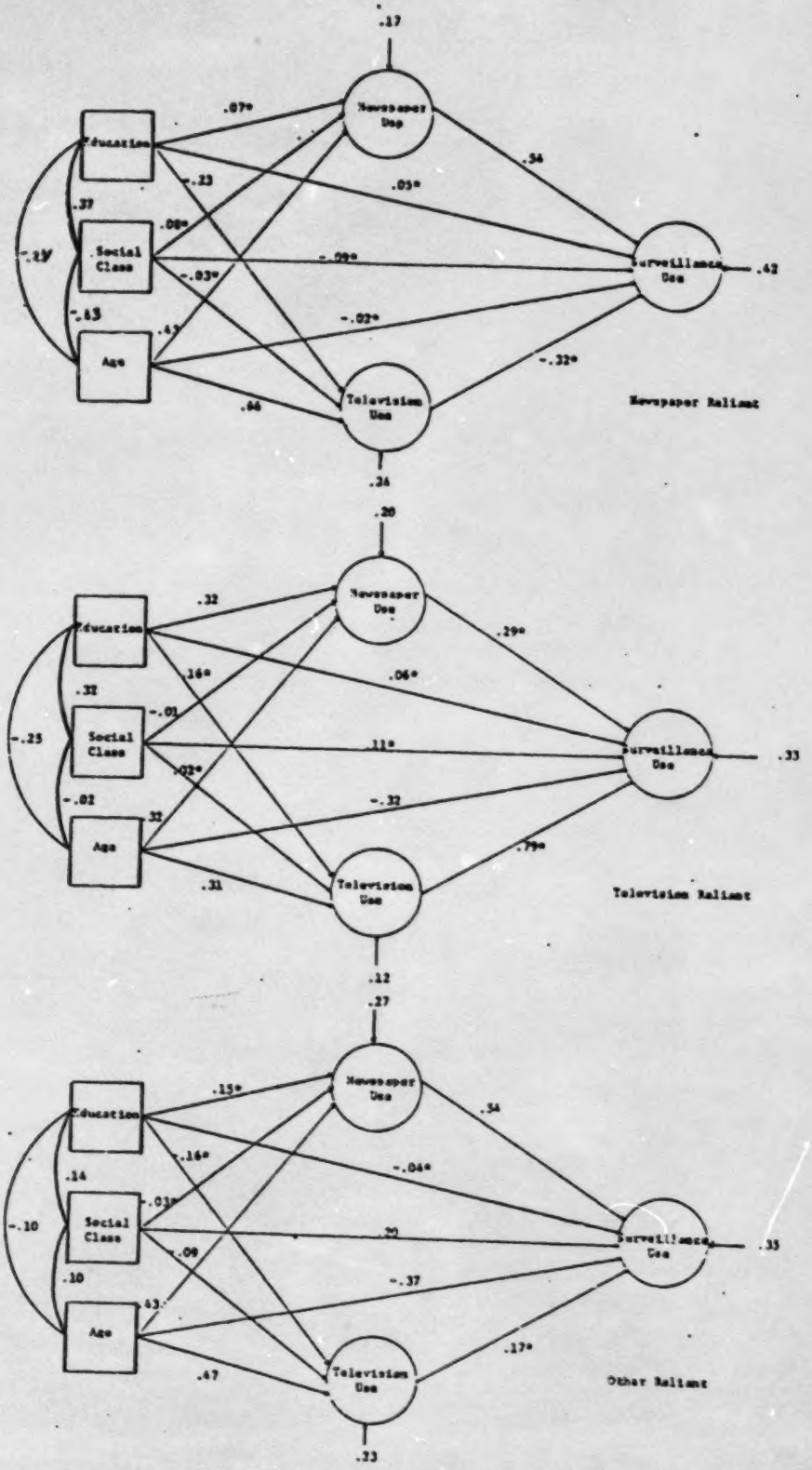

Figure 3. Structural equations models relating use of the media, surveillance gratifications and antecedent conditions holding factor structures invariant across groupings by primary reliance. Path coefficients are standardized; parameters indicated with an asterisk are statistically nonsignificant. N = 236 (newspaper reliant), 212 (television reliant), 123 (other reliant),

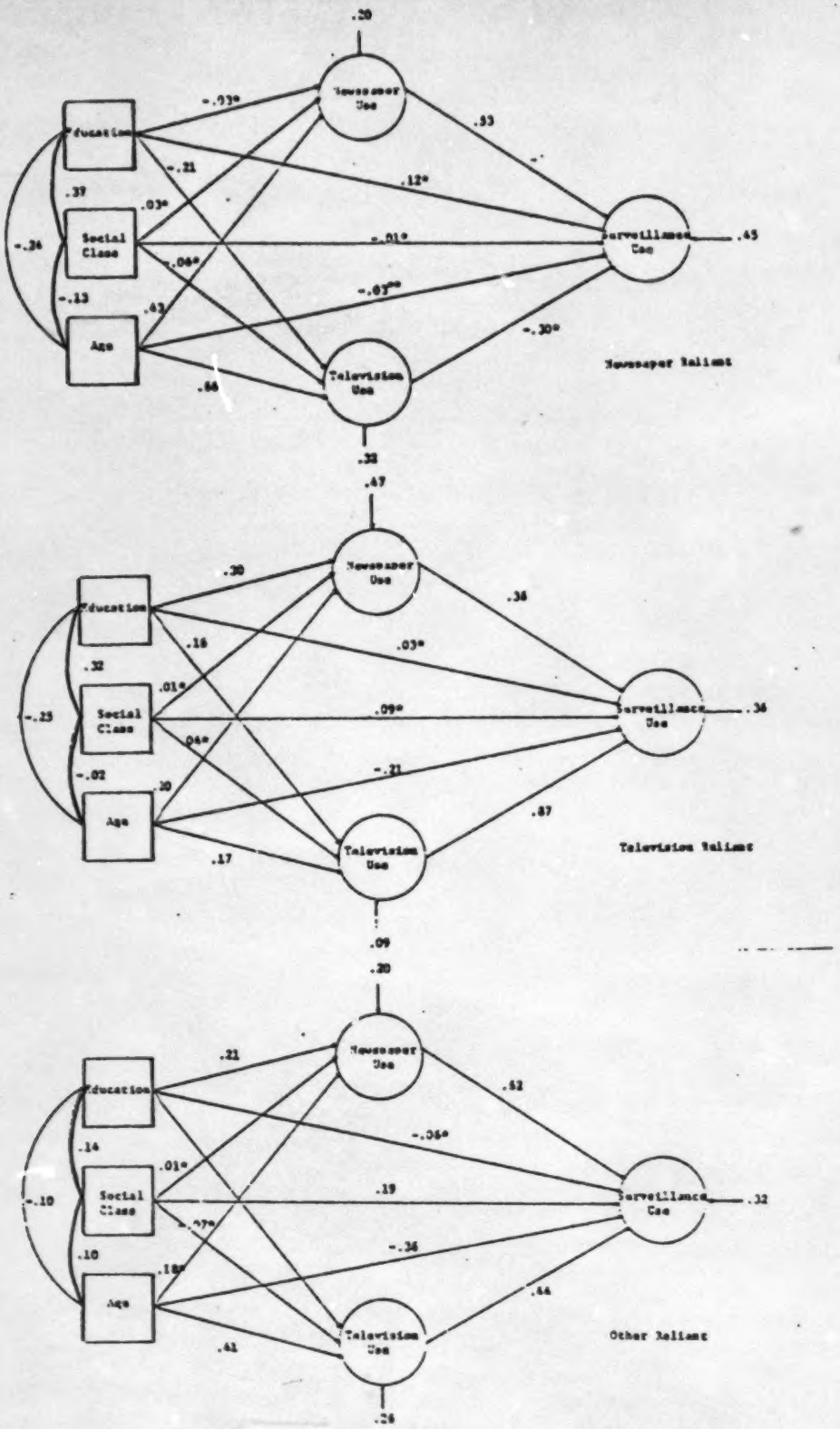

Figure 4. Structural equation models relating use of the media, surveillance gratifications and antecedent conditions permitting factor structures of the media constructs to vary across groupings by primary reliance. Path coefficients are standardized: parameters indicated with an asterisk are statistically nonsignificant. N = 236 (newspaper reliant), 212 (television reliant), 123 (other reliant).

Indicators	Invariant Factor Structure	Variant Factor Structure NP Rel	TV Rel	Oth Rel
λY_1 (Candidates' Stands)	.65	.64	.64	.64
λY_2 (Personal Qualities)	.64	.71	.62	.62
λY_3 (What Candidates Will Do)	.45	.48	.41	.48
Disturbance Terms	.42	.35	.47	.42

	X^2	d.f.	p.
Model I - Invariant Factor Structure	10.69	10	.38
Model II - Variant Factor Structure	10.02	6	.12

Table 1. Analysis of Surveillance uses of the media. λ values are standardized. All parameters are significant at p = .05.

Indicator	Model I	Model II	Model III NP	Model III TV	Model III Oth	Model IV NP	Model IV TV	Model IV Oth	Model V
NP Reliance	.34	.35	---	---	---	---	---	---	1.00
NP Reading Frequency	.40	.39	.33	.33	.33	.33	.33	.33	.41
NP National News	.69	.69	.14*	1.30	.47	.19*	-.07*	-.09*	.67
NP State and Local News	.69	.62	.52	.74	.57	.07	1.15	.52	.62
TV Reliance	-.20	.14	---	---	---	---	---	---	1.00
TV Viewing Frequency	-.12	.22	.17	.17	.17	.46	.48	.23	.19
TV National News	.26	.58	.40	28.09*	.35	.47	.72	.48	.64
TV State and Local News	.18	.64	.72	10.97*	.62*	.82	.22*	.23	.58
(N)	(569)	(569)	(236)	(212)	(123)	(236)	(212)	(123)	(569)
Model Fit Statistics									
Goodness-of-fit X^2	159.64	97.17	59.72			91.60			61.76
d.f.	20	19	24			27			18
p.	.00	.00	.00			.00			.00

Table 2. Tests of five models of mass media use. Figures indicated with an asterisk are statistically nonsignificant parameters (all others significant at p = .05). Parameters equal to 1.00 are constrained to that value by the model. Models with no value fixed to 1.0 used newspaper and television frequency indicators to set a metric for other indicators. Boxes indicate groupings of indicators for "true" or "latent" variables. Models I, II and V use a rank ordering of the relevant medium for reliance measures. Models III and IV use primary reliance as a grouping variable. All parameter estimates are standardized. Signs are reversed for reliance variables to maintain logical consistency.

Alternative Structures

Indicators	MODEL I NP	MODEL I TV	MODEL II NP	MODEL II TV	MODEL III NP	MODEL III TV
NP Frequency	.37	---	.37	-.02*	.16	.14
NP National News	.68	-.17*	.81	.19*	1.69*	-.14*
NP State and Local	.58	.03*	.57	---	.43	---
TV Frequency	---	.23	-.16	.21	-.10	.26
TV National News	.44	.30	.24	.26*	.22	.25
TV State and Local	.87*	1.24*	---	1.12	---	.79

	Model I		Model II		Model III					
					NP Rel		TV Rel		Oth Rel	
	NP	TV	NP	TV	NP	TV	NP	TV	NP	TV
Disturbance Terms	.13	.05*	.33	.25	.32	.87	.17	.32	.23	.69
Disturbance Correlation	-.04*		.18		.18		.15		.29	

Model Fit Statistics	Model I	Model II	Model III
Goodness-of-fit X^2	7.57	7.57	39.47
d.f.	4	4	28
p.	.11	.11	.07

Table 3. Comparison of three alternative models positing two true variables of newspaper and television use. Standardized values are reported for λ values (factor score coefficients). Parameters indicated with an asterisk are statistically nonsignificant. N=569 for Models I and II, N=236, 212, 123 for subgroups for Model III.

	NPR	TVR	NPF	TVF	NPN	TVN	NPS	TVS	IST	PQL	WWD	EDU	SCL	AGE
NP Reliance	*													
TV Reliance	-.07	*												
NP Frequency	.16	-.13	*											
TV Frequency	-.04	.20	-.04	*										
NP National	.26	-.13	.26	-.11	*									
TV National	.01	.11	.13	.07	.21	*								
NP State/Loc.	.21	-.15	.24	-.08	.43	.12	*							
TV State/Loc.	-.01	.08	.10	.19	.05	.36	.18	*						
Issue Stands	.08	-.01	.13	-.13	.31	.22	.19	.05	*					
Personal Qual.	.08	.06	.06	.00	.20	.22	.07	.15	.43	*				
What Will Do	.02	.05	.02	-.01	.20	.17	.09	.09	.30	.29	*			
Education	.07	-.17	.08	-.25	.24	-.02	.05	-.15	.20	.01	-.34	*		
Social Class	-.01	-.02	.06	-.13	.11	-.01	.04	-.07	.13	.01	-.17	.32	*	
Age	.12	-.00	.21	.17	.11	.26	.17	.21	-.09	.13	.05	.20	.01	*
Mean	1.76	1.97	3.53	2.09	3.45	3.48	3.33	3.57	2.72	2.45	2.40	14.31	2.12	42.37
s.d.	.82	1.03	.83	1.51	.74	.76	.80	.72	.52	.62	.68	2.95	1.33	17.87

Appendix A, Table 1. Correlations, means and standard deviations of data for the full sample. Signs of reliance variables have been reversed for logical consistency. N=569.

	NPF	TVF	NPN	TVN	NPS	TVS	IST	PQL	WWD	EDU	SCL	AGE
NP Frequency	*											
TV Frequency	.18	*										
NP National	.13	-.04	*									
TV National	.19	.09	.09	*								
NP State/Loc.	.12	.01	.25	.20	*							
TV State/Loc.	.27	.17	-.01	.39	.41	*						
Issue Stands	-.03	-.08	.18	-.05	-.01	-.09	*					
Personal Qual.	.05	.04	.13	.09	-.00	.11	.35	*				
What Will Do	.11	.03	.22	.12	.10	.07	.21	.33	*			
Education	-.03	-.25	.24	-.16	-.07	-.19	.21	-.06	-.02	*		
Social Class	.08	-.16	.16	-.10	.01	-.10	.06	.06	.00	.37	*	
Age	.24	.25	.01	.40	.23	.33	-.14	.16	.05	-.24	-.13	*
Mean	3.89	1.84	3.68	3.52	3.52	3.54	2.80	2.49	2.42	14.72	2.71	43.64
s.d.	.35	1.40	.55	.71	.67	.73	.42	.60	.68	2.77	1.23	17.10

Appendix A, Table 2. Correlations, means and standard deviations of data for the newspaper reliant. N=236.

	NPF	TVF	NPN	TVN	NPS	TVS	IST	PQL	WWD	EDU	SCL	AGE
NP Frequency	*											
TV Frequency	-.00	*										
NP National	.19	-.05	*									
TV National	.12	-.03	.29	*								
NP State/Loc.	.13	-.02	.44	.13	*							
TV State/Loc.	.07	.14	.11	.25	.05	*						
Issue Stands	.11	-.12	.29	.35	.33	.10	*					
Personal Qual.	.01	-.08	.22	.32	.18	.17	.50	*				
What Will Do	-.05	-.03	.21	.15	.16	.14	.35	.25	*			
Education	.17	-.21	.19	.19	.11	-.05	.27	.17	.00	*		
Social Class	.10	-.18	.04	.14	.08	-.04	.17-	.09	.11	.32	*	
Age	.16	.10	.13	.15	.06	.14	-.07	.09	-.06	-.25	.02	*
Mean	3.28	2.62	3.26	3.58	3.17	3.69	2.69	2.47	2.45	13.48	2.41	41.77
s.d.	.95	1.45	.81	.72	.84	.65	.58	.62	.68	2.86	1.36	17.93

Appendix A, Table 3. Correlations, means and standard deviations of data for the television reliant. N=212.

	NPF	TVF	NPN	TVN	NPS	TVS	IST	PQL	WWD	EDU	SCL	AGE
NP Frequency	*											
TV Frequency	-.03	*										
NP National	.24	-.15	*									
TV National	.16	.14	.27	*								
NP State/Loc.	.32	-.15	.47	.03	*							
TV State/Loc.	.22	.22	.13	.42	.16	*						
Issue Stands	.15	-.16	.42	.34	.12	.17	*					
Personal Qual.	.09	.08	.24	.23	-.02	.19	.39	*				
What Will Do	.06	-.13	.20	.23	-.05	.01	.35	.28	*			
Education	-.11	-.15	.25	-.02	.03	-.11	.07	-.08	.03	*		
Social Class	-.07	.15	.08	-.08	-.07	.03	.16	.01	.05	.14	*	
Age	.33	.23	.17	.25	.23	.16	-.10	.13	.02	-.10	.10	*
Mean	3.30	1.68	3.33	3.19	3.22	3.38	2.64	2.34	2.28	14.97	2.88	41.45
s.d.	.98	1.56	.83	.89	.89	.79	.55	.65	.66	3.10	1.44	18.99

Appendix A, Table 4. Correlations, means and standard deviations of data for other reliant. N=123.

Appendix B. LISREL model specification for the structural equation analyses.

Beta Matrix (coefficients relating endogenous true variables):

		From		
		NP Use	TV Use	Surv.
	NP Use	1.0	0.0	0.0
To	TV Use	0.0	1.0	0.0
	Surv.	B_1	B_2	1.0

Gamma Matrix (coefficients relating exogenous to endogenous true variables):

		From		
		Educ.	Soc.Cl.	Age
	Educ.	G_1	G_2	G_3
To	Soc.Cl.	G_4	G_5	G_6
	Age	G_7	G_8	G_9

Psi Matrix (Variance-Covariances of true disturbances):

		NP Use	TV Use	Surv.
	NP Use	ps_1		
To	TV Use	ps_2	ps_3	
	Surv.	0.0	0.0	ps_4

Phi Matrix (Variance-Covariances of true exogenous variables) uses only the observed correlations. The lambda Y matrix is discussed in the text. Errors associated with the indicators are constrained through specification of a diagonal matrix (i.e., errors of the indicators are uncorrelated).